



Serial to TCP/IP Dispatcher Protocol

Version 1.04

©Copyright Miranda Technologies Inc.

All rights reserved.

ATTENTION: please read the following terms and conditions carefully. By using Serial-to-TCP/IP Dispatcher Protocol documentation, you agree to the following terms and conditions:

Miranda Technologies Inc. hereby grants permission and license to owners of Kaleido to use their product manuals for their own internal business use. Manuals for Miranda Technologies Inc. products may not be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose unless specifically authorized in writing by Miranda Technologies Inc.

A Miranda Technologies Inc. manual may have been revised to reflect changes made to the product during its manufacturing life. Thus, different versions of a manual may exist for any given product. Care should be taken to ensure that one obtains the proper manual version for a specific product serial number.

Information in this document is subject to change without notice and does not represent a commitment on the part of Miranda Technologies Inc.

Title	Serial to TCP/IP Dispatcher Protocol
Part Number	M819-0300-104
Revision	23 December 2008, 7:55 pm

toc

table of contents

1	Serial to TCP/IP Dispatcher Protocol	1
Overview		2
Description of Data Flow		2
Normal Case		3
Exception Case		4
Interface		5
Serial Interface		5
Command ID Table		6
Serialization Convention		6
Annex A - Checksums		6
8-Bit Checksum		6
Annex B - Example		7
Ross Interaction Use Case		7
2	Contact Us!	11

Serial to TCP/IP Dispatcher Protocol

This document presents the Serial-to-TCP Dispatcher, which is a piece of software designed to run on a separate PC, or embedded into a product (such as the Kaleido-X), and act as a bridge between a serial device and the TCP/IP network.

Summary

<i>Overview</i>	<i>2</i>
<i>Interface</i>	<i>5</i>
<i>Annex A - Checksums</i>	<i>6</i>
<i>Annex B - Example</i>	<i>7</i>

Overview

The purpose of the Dispatcher is to act as communication bridge between a serial device and multiple TCP/IP devices.

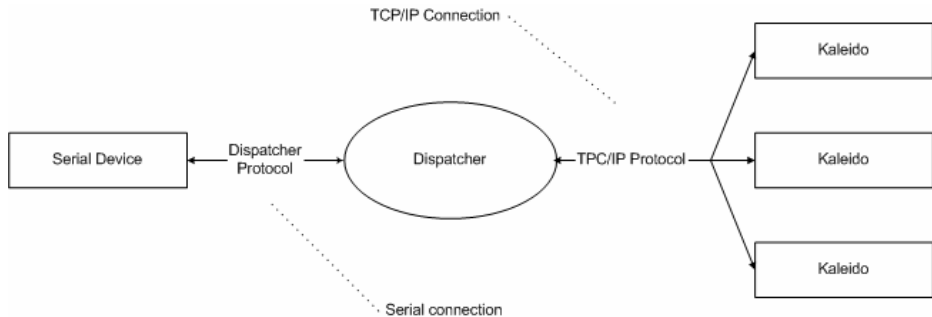


Figure 1: Functional model

Description of Data Flow

- The Dispatcher expects the data coming from the serial port to respect the format defined in Figure 4: Dispatcher Protocol.
- In normal circumstances (see Figure 3: Dispatcher Flowchart), the Dispatcher extracts the Message section of the data packet (shown in Figure 4: Dispatcher Protocol) received on the serial port, then decodes it to a TCP/IP segment, and finally sends it to the IP address/TCP port number that matches the Link ID.
- In normal circumstances (see Figure 3: Dispatcher Flowchart), the Dispatcher extracts the data contained in a TCP/IP segment received from an open TCP/IP connection, then encapsulates it to a serial data packet (see Figure 4: Dispatcher Protocol), and finally forwards it onto the serial connection.

Normal Case

The following diagram describes the normal flow of data from a serial device to multiple TCP/IP devices.

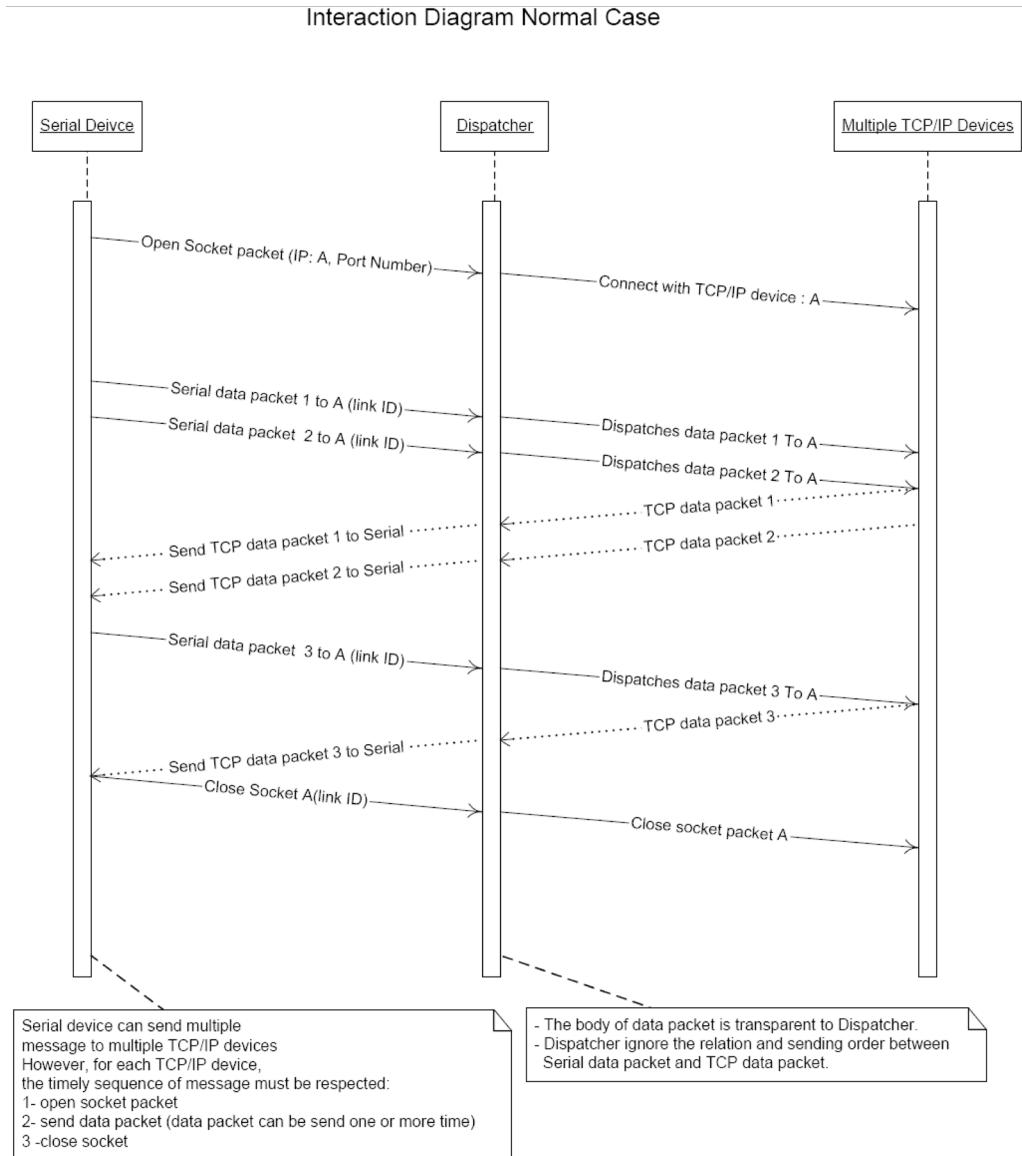


Figure 2: Interaction diagram

Exception Case

The Dispatcher protocol does not return any error message. Invalid packets are discarded silently. The serial device that uses the Dispatcher must implement its own mechanism to ensure that data is successfully transmitted.

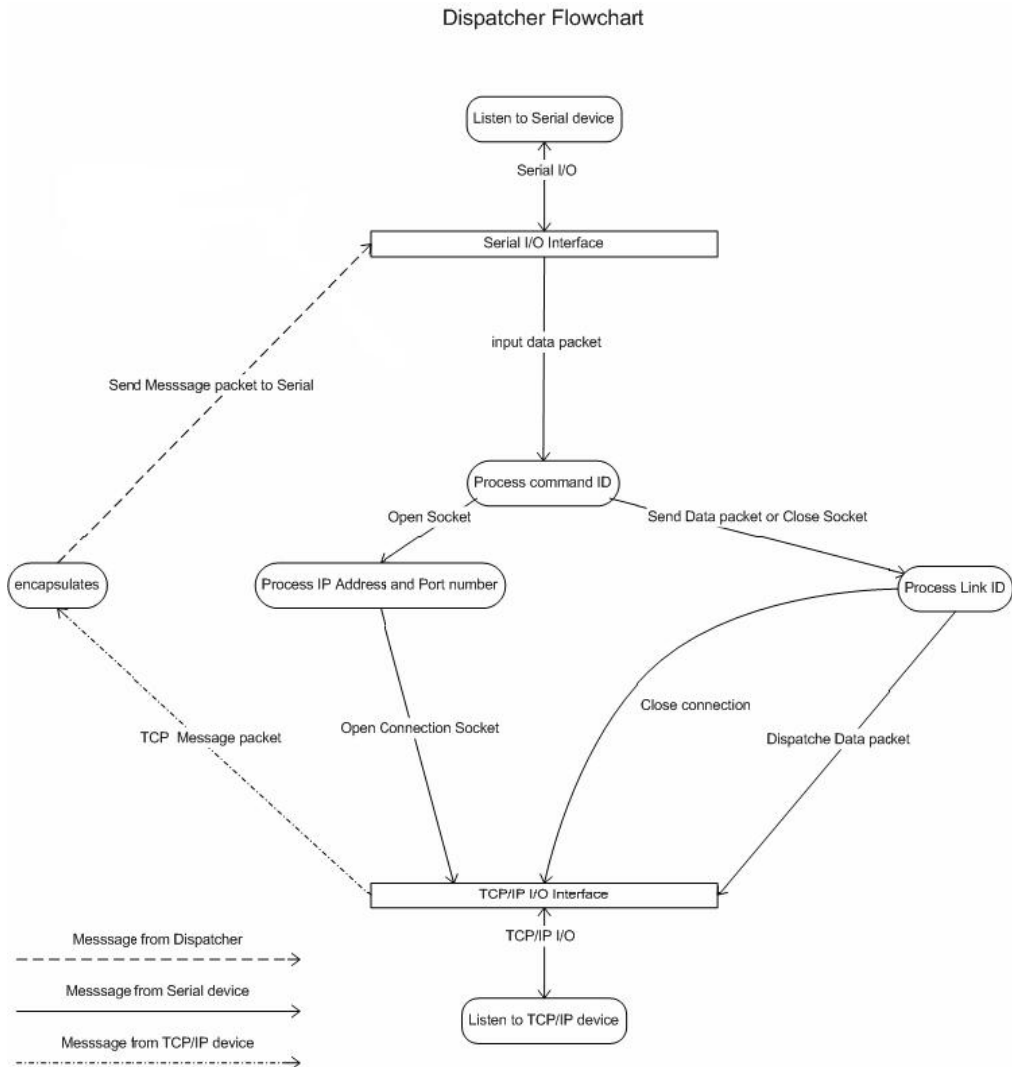


Figure 3: Dispatcher Flowchart

Interface

This section presents the interface used to manage this new feature.

Serial Interface

Figure 4 shows the format of the packets received by the Dispatcher over its serial interface (i.e. Open socket packet, Data packet and Close socket packet) as well as the format of the packets sent by the Dispatcher onto its serial interface (i.e. Data packet from TCP/IP).

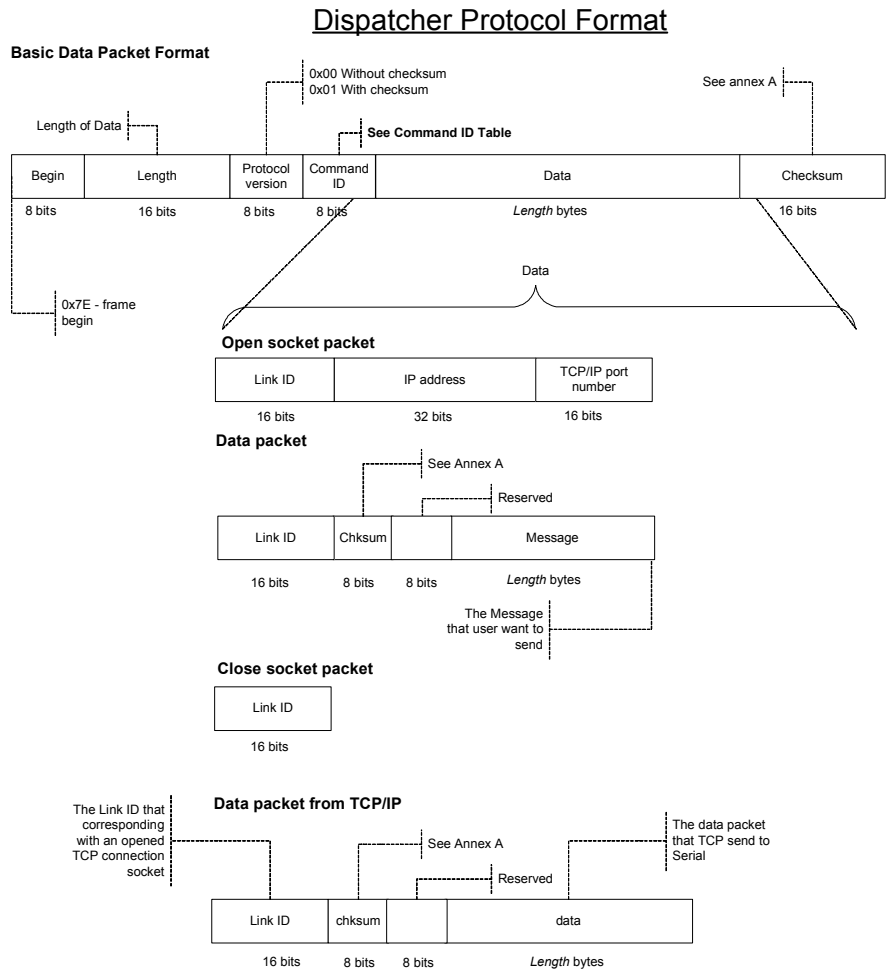


Figure 4: Dispatcher Protocol

Command ID Table

This section presents the valid values for the Command ID field.

Command ID	Command Description
0x01	Open Socket
0x02	Send Data
0x03	Close Socket
0x04	Data from TCP device

Serialization Convention

The Dispatcher expects data coming from the serial port to have big-endian bit ordering and network byte order.

Annex A - Checksums

The checksum algorithm used is the IP checksum specified in RFC1071 (<http://www.faqs.org/rfcs/rfc1071.html>). It can be used in two modes: 8-bit and 16-bit.

8-Bit Checksum

The 8-bit checksum is used in the data packet as a header checksum. It is used to verify that the length field was not corrupt.

The checksum should include the 16-bit length field, the 8-bit protocol field and the 8-bit command field. The checksum must be calculated as described in RFC1071, but using single-byte complement 1's sum instead of byte pair.

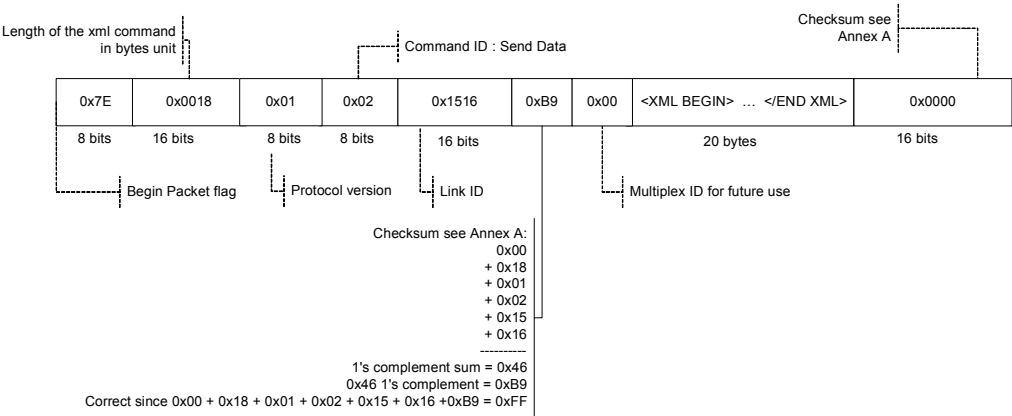


Figure 5: Checksums

Annex B - Example

This section describes a Serial-To-TCP Dispatcher Protocol use case.

Ross Interaction Use Case

The following sections present a use case in which the Dispatcher is used with a Ross production switcher to send XML commands to a Miranda Kaleido Multi-image system. Each sub-section focuses on a specific Dispatcher packet.

Ross Open Socket Message

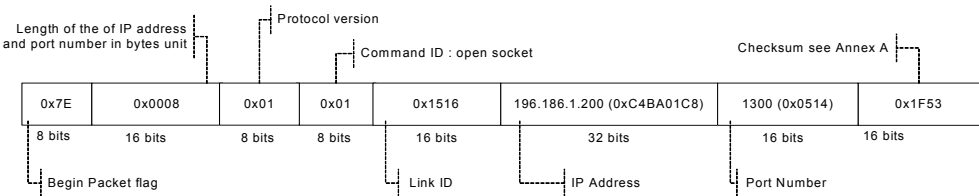


Figure 6: Ross Switcher Open socket example

Ross Send Data Packet Message

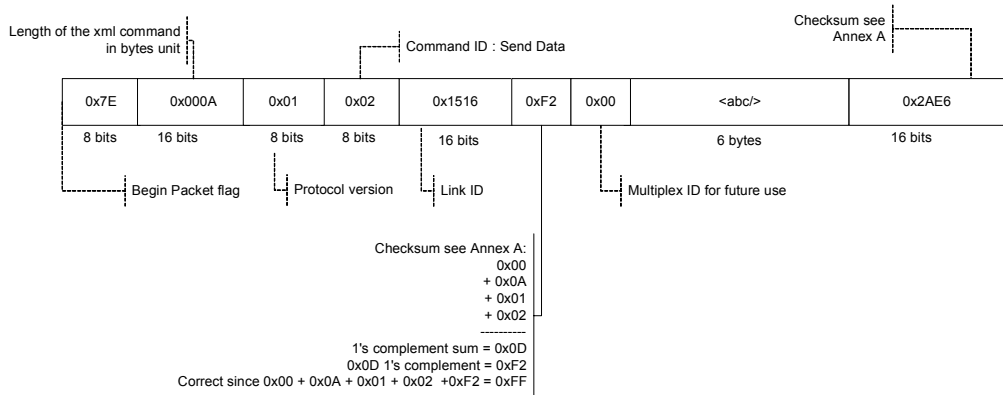


Figure 7: Send data packet to TCP

Ross Data from Kaleido

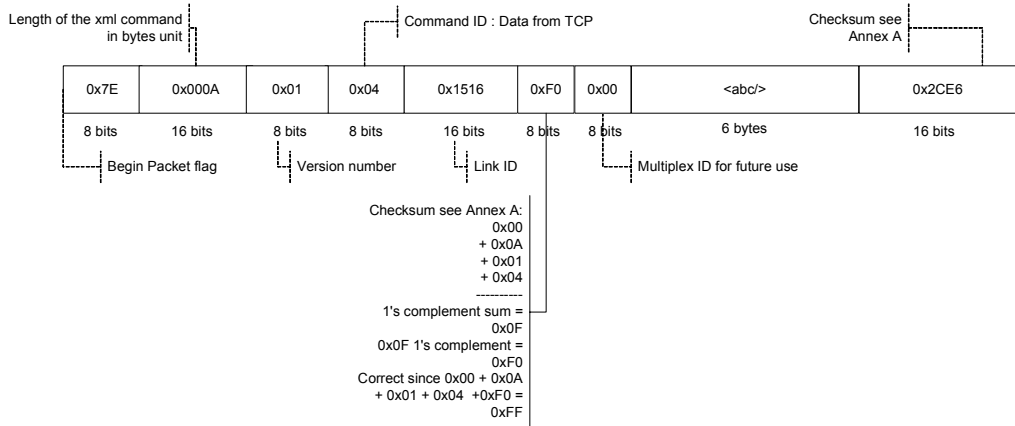


Figure 8: Data packet from TCP

Ross Close Socket Message

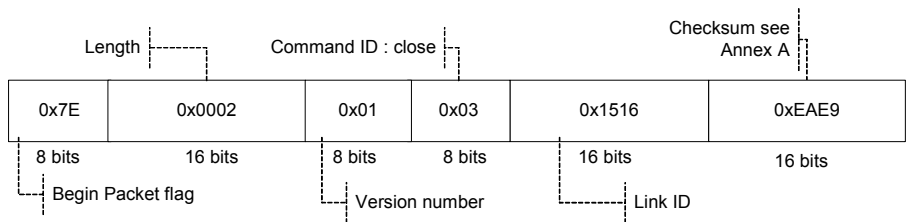


Figure 9: Close socket message



Contact Us!

Miranda Technical Support

For technical assistance, please contact the Miranda Technical Support centre nearest you:

Americas

Office hours: 9:00 a.m. – 9:00 p.m. (EST)
Telephone: +1-800-224-7882
Fax: +1-514-335-1614
E-mail: techsupp@miranda.com

Asia

Office hours: 9:00 a.m. – 5:00 p.m. (GMT+8)
Telephone: +852-2539-6987
Fax: +852-2539-0804
E-mail: asiatech@miranda.com

Europe, Middle East, Africa, UK

Office hours: 9:00 a.m. – 6:00 p.m. (GMT)
Telephone: +44 (0) 1491 820222
Fax: +44 (0) 1491 820002
E-mail: eurotech@miranda.com

China

Telephone: +86-10-5873-1814
E-mail: asiatech@miranda.com

France

Office hours: 9:00 a.m. – 5:00 p.m. (GMT+1)
Telephone: +33 1 55 86 87 88
Fax: +33 1 55 86 00 29
E-mail: eurotech@miranda.com

Corporate Head Office

Miranda Technologies Inc.

3499 Douglas-B.-Floreni, St-Laurent, Quebec, Canada H4S 1Y6

Telephone: 514-333-1772

Fax: 514-333-9828

Web: www.miranda.com

